

1. A method of operating a communication system, the method comprising:  
receiving at least four first digital data bits;  
entering the at least four digital data bits into a first data structure to yield  
a first amplitude value;

5 processing the first amplitude value to generate a single analog signal  
cycle;  
transmitting the single analog signal cycle;  
receiving the single analog signal cycle;  
processing the single analog signal cycle to generate a second amplitude  
10 value; and  
entering the second amplitude value into a second data structure to yield  
at least four second digital data bits.

2. A method of operating a digital data encoding system, the method  
15 comprising:  
receiving at least four digital data bits;  
entering the at least four digital data bits into a data structure to yield a  
symbol; and  
processing the symbol to generate a single analog signal cycle.

20 3. The method of claim 2 wherein the symbol represents an amplitude value for  
the single analog signal cycle.

4. The method of claim 2 further comprising:  
25 transmitting at least one maximum amplitude to a receiver system; and  
receiving an acknowledgment from the receiver system.

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5. A method of operating a digital data decoding system, the method comprising:

receiving a single analog signal cycle;

processing the single analog signal cycle to generate a symbol; and

entering the symbol into a data structure to yield at least four digital data bits.

6. The method of claim 5 wherein the symbol represents an amplitude value for the single analog signal cycle.

7. The method of claim 5 wherein processing the single analog signal cycle comprises detecting a relative zero-axis crossing of the single analog signal cycle.

8. The method of claim 5 wherein processing the single analog signal cycle comprises detecting a first amplitude value and a second amplitude value of the single analog signal cycle.

9. The method of claim 5 further comprising:

receiving at least one maximum amplitude from a transmitter system;

adjusting the data structure based on the at least one maximum

amplitude; and

generating and transmitting an acknowledgment to the transmitter system.

10. A digital data encoding system, comprising:

a data structure system configured to receive at least four digital data bits, enter the at least four digital data bits into a data structure to yield a symbol, and transfer the symbol; and

a signal generating system configured to receive the symbol and process the symbol to generate a single analog signal cycle.

11. The digital data encoding system of claim 10 wherein the symbol comprises an amplitude value for the single analog signal cycle.

12. The digital data encoding system of claim 10 wherein the signal generating system is further configured to:

transmit at least one maximum amplitude to a receiver system; and  
receive an acknowledgment from the receiver system.

13. A digital data decoding system, comprising:

a signal processing system configured to receive a single analog signal cycle, process the single analog signal cycle to generate a symbol, and transfer the symbol; and

a data structure system configured to receive the symbol and enter the symbol into a data structure to yield at least four digital data bits.

14. The digital data decoding system of claim 13 wherein the symbol comprises an amplitude value for the single analog signal cycle.

15. The digital data decoding system of claim 13 wherein the signal processing system is further configured to detect a relative zero-axis crossing of the single analog signal cycle.

16. The digital data decoding system of claim 13 wherein the signal processing system is further configured to detect a first amplitude value and a second amplitude value of the single analog signal cycle.

17. The digital data decoding system of claim 13 wherein the data structure system is further configured to:

receive at least one maximum amplitude from a transmitter system;  
adjust the data structure based on the at least one maximum amplitude;

5 and

generate and transmit an acknowledgment to the transmitter system.

18. A software product for encoding digital data onto an analog signal, comprising:

10 encoding software configured when executed by a processor to direct the processor to receive at least four digital data bits, enter the at least four digital data bits into a data structure to yield a symbol, and process the symbol to generate a single analog signal cycle; and

a software storage medium configured to store the encoding software.

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19. The software product of claim 18 wherein the symbol comprises an amplitude value for the analog signal cycle.

20. The software product of claim 18 wherein the encoding software is further configured to direct the processor to:

transmit at least one maximum amplitude to a receiver system; and  
receive an acknowledgment from the receiver system.

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21. A software product for decoding digital data from an analog signal, comprising:

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decoding software configured when executed by a processor to direct the processor to receive a single analog signal cycle, process the single analog signal cycle to generate a symbol, and enter the symbol into a data structure to yield at least four digital data bits; and

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a software storage medium configured to store the decoding software.

22. The software product of claim 21 wherein the symbol comprises an amplitude value for the single analog signal cycle.

5 23. The software product of claim 21 wherein the decoding software is further configured to direct the processor to detect a relative zero-axis crossing of the single analog signal cycle.

10 24. The software product of claim 21 wherein the decoding software is further configured to direct the processor to detect a first amplitude value and a second amplitude value of the single analog signal cycle.

25. The software product of claim 21 wherein the decoding software is further configured to direct the processor to:

15 receive at least one maximum amplitude from a transmitter system;

adjust the data structure based on the at least one maximum amplitude;

and

generate and transmit an acknowledgment to the transmitter system.